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LAND RESOURCES: DESERTIFICATION AND DROUGHT

Text submitted by the Chairman on the basis of negotiations
held on document A/CONF.151/PC/100/Add.17

Managing fragile ecosystems: combating desertification and drought
(Section II, Chapter 4 of Agenda 21)

Attached is the text of A/CONF.151/PC/100/Add.17 as it has been agreed in negotiations on 9-11 March 1992. The paragraphs in the introduction, basis for action and means for implementation have not been negotiated: language on these points will be inserted later, based on the results of ongoing consideration of cross-sectoral issues.

The texts of paragraph 51 of this document and A/CONF.151/PC/100/Add.17, paragraph 13, are still under negotiation. They will be included in the revised text of this document as soon as possible.

INTRODUCTION

1. ******(A/CONF.151/PC/WG.I/CRP.12/Rev.1, para. 11)< Fragile ecosystems are important ecosystems, with unique features and resources. Fragile ecosystems include deserts, semi-arid lands, mountains, wetlands, small islands, and certain coastal areas.****** This chapter addresses land resources issues in deserts and arid and semi-arid areas. The issue of mountains is addressed in the Agenda 21 chapter on Sustainable Mountain Development. 1/ The subject of small islands and coastal areas is presented in the Agenda 21 chapter on Oceans. 2/

2. ****(A/CONF.151/PC/62, para. 5)**« Desertification is land degradation in arid, semi-arid and dry sub-humid areas resulting from adverse human impact.»****** Desertification affects about a sixth of the world's population, 70 per cent of the total drylands amounting to 3.6 billion hectares, and one quarter of the total land area of the world. The most obvious impact of desertification, in addition to widespread poverty, is the degradation of 3.3 billion hectares of the total area of rangelands, constituting 73 per cent of the rangelands which have low potential for human and animal carrying capacity; decline in soil fertility and soil structure on about 47 per cent of total area in the drylands which constitutes marginal rainfed croplands, and the degradation of irrigated croplands amounting to 30 per cent of the total area on drylands which have high population density and agricultural potential.

3. The first priority in combating desertification should be the implementation of preventive measures for lands that are not yet degraded, or which are only slightly degraded. This is recognized in the United Nations Plan of Action to Combat Desertification. In combating desertification and drought, the participation of local communities, rural organizations, national Governments, non-governmental organizations and international and regional organizations is essential.

4. Discussion on A/CONF.151/PC/WG.I/L.29 showed the national, regional and global nature of the desertification problem and the important developmental and environmental implications that need investigation and immediate action. There was broad agreement on the content of this document and the proposed programme areas for Agenda 21 which were annexed to the decision in A/CONF.151/PC/WG.I/L.36/Rev.1. This decision also requested a further elaboration of the proposed programme areas and action for consideration by the Preparatory Committee at its fourth session.

5. Programme areas in this chapter include:

- A. Strengthening the knowledge base and developing information and monitoring systems of regions prone to desertification and drought as well as the economic and social aspects of these systems;
- B. Combating land degradation through, inter alia, intensifying soil conservation, afforestation and reforestation activities;
- C. Developing and strengthening integrated programmes for eradication of poverty and promotion of alternative livelihood systems in areas prone to desertification;
- D. Developing and integrating comprehensive anti-desertification programmes into national development plans and national environmental planning;

- E. Developing comprehensive drought preparedness and drought-relief schemes, including self-help arrangements, for drought-prone areas and designing programmes to cope with environmental refugees;
- F. Encourage and promote popular participation and environmental education, focusing on desertification control and managing the effects of drought.

A. STRENGTHENING THE KNOWLEDGE BASE AND DEVELOPING INFORMATION AND MONITORING SYSTEMS OF REGIONS PRONE TO DESERTIFICATION AND DROUGHT AS WELL AS THE ECONOMIC AND SOCIAL ASPECTS OF THESE SYSTEMS

Basis for action

6. The global assessments of the status and rate of desertification conducted by the United Nations Environment Programme (UNEP) in 1977, 1984 and 1991 have revealed insufficient basic knowledge of human-induced desertification processes and their interactions between climate fluctuations and recurrent droughts in world drylands. The absence of an adequate world-wide monitoring system severely restricts the development and implementation of effective anti-desertification programmes. The capacity of existing international, regional and national institutions, particularly in developing countries, to generate and exchange relevant information is limited. An integrated and coordinated information and monitoring system based on advanced technology and embracing global, regional, national and local levels is essential for understanding the dynamics of desertification and drought processes. It is also important for developing adequate measures to deal with desertification and drought and improving the socio-economic conditions.

Objectives

7. Promote establishment and/or strengthening of national environmental information coordination centres which will act as focal points within Governments for sectoral ministries and provide necessary standardization and back-up services. Ensure also that national environmental information systems on desertification and drought are linked together through a networking at subregional, regional and interregional levels.

8. Strengthen regional and global monitoring networks, linked to the development of national monitoring systems for the observation of land degradation and desertification caused both by climate fluctuations and by human impact, and identify priority areas for action.

9. Establish a permanent system at both national and international levels for monitoring desertification/land degradation with the aim of improving living conditions in the affected areas.

Activities

Management-related

10. National Governments, in cooperation with the international community, should:

(a) Establish and/or strengthen environmental information systems at the national level;

(b) Strengthen national State, provincial/local assessment and ensure cooperation/networking between existing environmental information and monitoring systems such as EARTHWATCH, Sahara Sahel Observatory (SSO) etc.;

(c) Strengthen the capacity of national institutions to analyse environmental data so that ecological change can be monitored and environmental information obtained on a continuing basis at the national level.

Data and information

11. National Governments, in cooperation with relevant local, regional and international organizations, should undertake:

(a) Review and study the means for measuring the ecological, economic and social consequences of desertification and land degradation, and introduce internationally the results of these studies into the practice of desertification and land degradation assessment;

(b) Review and study the interactions between climate, drought and desertification socio-economic impacts, and utilize the results of these studies in order to get concrete actions.

12. National Governments, with the support of the international community, should:

(a) Support the integrated data collection and research work of programmes related to desertification and drought problems;

(b) Support national, regional and global programmes for integrated data collection and research networks, carrying out assessment of soil and land degradation;

(c) Strengthen national and regional meteorological and hydrological networks and monitoring systems to ensure adequate basic information collection and communication among national, regional and international centres.

International and regional cooperation and coordination

13. National Governments and the international community should strengthen regional programmes and international cooperation such as the Permanent Inter-state Committee on Drought Control in the Sahel (CILSS), the Intergovernmental Authority on Drought and Development (IGADD), the Southern African Development Coordination Conference (SADCC), Arab Maghreb Union (UMA) and other regional organizations, as well as organizations such as the Sahara and Sahel Observatory (OSS).

Means of implementation

Financing and cost-evaluation

14. The total financing required to implement this programme area is about US\$ 350 million a year, while the average annual financing required from international sources is about US\$ 175 million. From this international figure, the average annual costs related to accelerated development would be about US\$ 165 million and the costs for strengthening the capacity of international institutions would be about US\$ 10 million a year.

Scientific and technological means

15. National Governments, in cooperation with the international and regional organizations working on the issue of desertification and drought, should:

(a) Draw on existing inventories of natural resources, such as energy, water, soil, minerals, plant and animal access to food as well as other resources to food such as housing, employment, health, education and demographic distribution in time and space;

(b) Develop integrated information systems for environmental monitoring, accounting and impact assessment.

Human resource development

16. National Governments, in cooperation with the international and regional organizations working on the issue of desertification and drought, should develop technical and professional skills of people engaged in monitoring and assessment of the issue of desertification and drought.

Capacity-building

17. National Governments, in cooperation with the international and regional organizations working on the issue of desertification and drought, should strengthen national and local-level institutions by providing adequate staff equipment and finance to monitor and assess desertification.

B. COMBATING LAND DEGRADATION THROUGH, INTER ALIA,
INTENSIFYING SOIL CONSERVATION, AFFORESTATION
AND REFORESTATION ACTIVITIES

Basis for action

18. Desertification affects about 3.6 billion hectares, which is about 70 per cent of the total area of the world's drylands or nearly one quarter of the global land. The first priority is to protect and take preventive measures in areas which are not yet affected or only slightly affected by desertification. This includes more than 1.2 billion hectares of rangelands (about 27 per cent of the total area of rangelands), 240 million hectares of rainfed cropland (about 53 per cent of the total area of rainfed cropland) and 100 million hectares of irrigated cropland (about 70 per cent of the total irrigated land). The second priority would involve implementation of corrective measures to sustain the productivity of moderately desertified drylands. This includes about 1,250 million hectares of rangelands (about 28 per cent of the total area of rangelands), 180 million hectares of rainfed cropland (about 40 per cent of the total area of rainfed cropland) and 35 million hectares of irrigated cropland (about 23 per cent of the total irrigated area). The third priority would consist of rehabilitation or protection for natural recovery of severely or very severely desertified drylands. These include over 2 billion hectares of rangelands, 33 million hectares of rainfed cropland and 9 million hectares of irrigated cropland.

19. An increasing vegetation cover would promote and stabilize the hydrological balance in the dryland areas and maintain land quality and land productivity. Prevention of not yet degraded land and application of corrective measures and rehabilitation of moderate and severely degraded drylands through the introduction of environmentally sound, socially acceptable and fair, and economically feasible land use systems. This will enhance the land carrying capacity and maintenance of biotic resources in fragile ecosystems.

Objectives

20. As regards areas not yet affected or only slightly affected by desertification, appropriate management of existing natural formations (including forests), for the conservation of biodiversity, watershed protection, sustainability of their production and agricultural development, and other purposes with full participation of indigenous people.

21. Rehabilitate moderately to severely desertified drylands for productive utilization and sustain their productivity for agropastoral/agro-forestry development through, inter alia, soil and water conservation.

22. Increase the vegetation cover and support management of biotic resources in regions affected or prone to desertification and drought notably through activities such as afforestation/reforestation, agro-forestry and community forestry and vegetation retention schemes.

23. Improve management of forest resources, including woodfuel. Reduce woodfuel consumption through more efficient utilization and conservation as well as enhancement and development and use of other sources of energy, including alternative sources of energy.

Activities

Management-related

24. National Governments, with the support of the international community, should:

(a) Implement urgent direct preventive measures in so-far non-affected but vulnerable or only slightly desertified drylands, by introducing (i) improved land use policies and practices for increased sustainable land productivity; (ii) appropriate, environmentally sound and economically feasible agricultural and pastoral technologies, and (iii) improved management of soil and water resources;

(b) Carry out accelerated afforestation and reforestation programmes, using drought-resistant, fast-growing species, in particular native ones, including legumes and other species, combined with community-based agro-forestry schemes. In this regard, creation of large-scale reforestation and afforestation schemes particularly through establishment of green belts should be considered, bearing in mind such measures could increase CO₂ sinks;

(c) Implement urgent direct corrective measures in moderately to severely desertified drylands in addition to the measures listed in (a) above, with a view to restoring and sustaining their productivity;

(d) Promote improved land/water/crop management systems making it possible to combat salinization in existing irrigated croplands. Stabilize rainfed croplands and introduce improved soil/crop management systems into land use practice;

(e) Promote participatory management of natural resources, including rangelands, to meet both the needs of the rural populations and conservation purposes, based on innovative or adapted indigenous technologies;

(f) Promote in situ protection and conservation of special ecological areas through legislation and other means for purposes of combating desertification, while ensuring the protection of biodiversity;

(g) Promote and encourage investment in forestry development in drylands through various incentives, including legislative measures;

(h) Promote the development and use of other sources of energy, including alternative sources of energy and improved stoves to lessen pressure on ligneous resources.

Data and information

25. National Governments should:

(a) Develop land-use models based on local practices for the improvement of local practices, with a focus on preventing land degradation. The models should give a better understanding of the variety of natural and human-induced factors that may contribute to desertification. Models should incorporate the interaction of new as well as traditional practices to prevent land degradation and reflect the resilience of the whole ecological and social system;

(b) Develop, test and introduce with due regard to environmental security considerations drought resistance, fast growing and productive plant species appropriate to the environment of regions concerned.

International and regional cooperation and coordination

26. The appropriate United Nations agencies, international organizations, non-governmental organizations, and bilateral agencies should:

(a) Coordinate their role in combating land degradation and promoting reforestation, agro-forestry and land management systems in affected countries;

(b) Support regional and subregional activities in technology development and dissemination, training and programme implementation to arrest dryland degradation.

27. The national Governments concerned, the appropriate United Nations agencies, and bilateral agencies should strengthen the coordinating role in dryland degradation of subregional intergovernmental organizations set up to cover these activities, e.g., CILSS, IGADD, SADCC and UMA.

Means of implementation

Financing and cost-evaluation

28. The total financing required to implement this programme area in developing countries is about US\$ 6 billion a year, while the average annual financing required from international sources is about US\$ 3 billion. From this international figure, costs related to accelerated development would be about US\$ 2.6 billion a year, the requirements for global environmental issues would be about US\$ 370 million a year, and the amount for strengthening the capacity of international institutions would be about US\$ 30 million a year.

Scientific and technological means

29. National Governments and local communities should:

(a) Integrate indigenous knowledge related to forests, forest lands, rangelands and natural vegetation into research activities on desertification and drought;

(b) Promote integrated research programmes on protection, restoration and conservation of water and land resources and land-use management based on traditional approaches, where feasible.

Human resource development

30. National Governments and local communities should:

(a) Establish mechanisms which ensure that land users, both women and men, are the main actors in implementing improved land use, including agro-forestry systems, in combating land degradation;

(b) Strengthen existing extension services in areas prone to desertification and drought, particularly for training of farmers and pastoralists on improved management of land and water resources in dry land.

Capacity-building

31. National Governments and local communities should:

(a) Develop and adopt, through appropriate national legislation, and introduce institutionally, new and environmentally sound development-oriented land-use policies;

(b) Support community-based people's organizations, especially farmers and pastoralists.

C. DEVELOPING AND STRENGTHENING INTEGRATED PROGRAMMES FOR
ERADICATION OF POVERTY AND PROMOTION OF ALTERNATIVE
LIVELIHOOD SYSTEMS IN AREAS PRONE TO DESERTIFICATION

Basis for action

32. Current livelihood and resource use systems are not able to maintain living standards in areas prone to desertification and drought and the growing population is increasing the pressure on the resource base. Poverty is a major factor in accelerating the rate of degradation and desertification. In many of the marginal drylands, the existing livelihood system, based largely on subsistence agriculture and livestock, are inadequate to be used on a sustainable basis. Measures listed in programme areas A, B, D and E will help but they should be complemented by additional social, political and economic

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national actions directed at alleviating poverty, generating alternative livelihoods, adjusting existing land tenure, promoting small-scale enterprises in rural areas and adjusting demographic policies.

Objectives

33. Create the capacity of village communities and pastoral groups to take charge of their development and the management of their land resources on a socially equitable and ecologically sound basis.

34. Improve production systems in order to achieve greater productivity within approved conservation of national resources in the framework of an integrated approach to rural development.

35. Provide opportunity for alternative livelihood as a basis for reducing pressure on land resources and at the same time provide additional resources of income, particularly for the rural population, thereby improving their standard of living.

Activities

Management-related

36. National Governments, with the support of the international community, should:

(a) Adopt policies at the national level regarding a decentralized approach to land resource management, delegating responsibility to rural organizations;

(b) Create or strengthen rural organizations in charge of village and pastoral land management;

(c) Establish and develop local, national and intersectoral mechanisms to handle environmental and developmental consequences of land tenure expressed in terms of land use and land ownership. Particular attention should be given to protecting the property rights of women and pastoral and nomadic groups living in rural areas;

(d) Create or strengthen village associations focused on economic activities of common pastoral interest (market gardening, transformation of agricultural products, livestock, herding, etc.);

(e) Promote rural credit and mobilization of rural savings through the establishment of rural banking systems;

(f) Develop infrastructure, and local production and marketing capacity, by involving the local people to promote alternative livelihood systems and alleviate poverty;

(g) Establish a revolving fund for credit to rural entrepreneurs and local groups, to facilitate establishment of cottage industries/business ventures and credit for input to agro-pastoral activities.

Data and information

37. National Governments, with the support of the international community, should:

(a) Conduct socio-economic baseline studies in order to have a good understanding of the situation in the programme area regarding, particularly, resource and land tenure issues, traditional ways of land management and characteristics of productions systems;

(b) Conduct inventory of natural resources (soil, water and vegetation) and their state of degradation, based primarily on the knowledge of the local population (e.g., rapid rural appraisal);

(c) Disseminate information on technical packages adapted to the social and economical and ecological conditions of each;

(d) Promote exchange and sharing of information concerning development of alternative livelihoods with other agro-ecological regions.

International and regional cooperation and coordination

38. National Governments, with the support of the international community, should:

(a) Promote cooperation and exchange of information among the arid and semi-arid land research institutions concerning techniques and technologies to improve land and labour productivity as well as viable production systems;

(b) Coordinate and harmonize the implementation of programmes and projects funded by the international organization communities and non-governmental organizations that are directed towards the alleviation of poverty and promotion of an alternative livelihood system.

Means of implementation

Financing and cost-evaluation

39. The total financing required for these programme areas is about US\$ 3 billion a year, while the average annual financing required from international sources is about US\$ 1.5 billion.

Scientific and technological means

40. National Governments, with the support of the international community, should:

(a) Undertake applied research in land-use with the support of local research institutions;

(b) Facilitate regular national regional and interregional communication and exchange on information and experience between extension officers and researchers;

(c) Support and encourage introduction and use of technologies for the generation of alternative sources of incomes.

Human resource development

41. National Governments, with the support of the international community, should:

(a) Train members of rural organizations in management skills and agro-pastoralists in special techniques such as soil and water conservation, water harvesting, agro-forestry, small-scale irrigation;

(b) Train extension agents and officers in the participatory approach to integrated land management.

Capacity-building

42. National Governments should establish and maintain mechanisms to ensure integration of strategies into sectoral and national development plans and programmes for poverty alleviation among the inhabitants of lands prone to desertification.

D. DEVELOPING AND INTEGRATING COMPREHENSIVE
ANTI-DESERTIFICATION PROGRAMMES INTO
NATIONAL DEVELOPMENT PLANS AND NATIONAL
ENVIRONMENTAL PLANNING

Basis for action

43. In a number of developing countries affected by desertification the natural resource base is the main resource upon which the development process must rely. The social systems interacting with land resources make the problem much more complex, requiring an integrated approach to planning and management of land resources. Anti-desertification and drought action plans should be integrated to include management of the environment and development aspects as well, thus fitting into the approach of integrated national development plans and national environmental action plans.

Objectives

44. Strengthen national institutional capabilities to develop appropriate anti-desertification programmes and to integrate them into national development planning.
45. Develop and integrate strategic planning frameworks for the development, protection and management of natural resources in dryland areas into national development plans, including national plans to combat desertification, and environmental action plans in countries most prone to desertification.
46. Initiate a long-term process for implementing and monitoring of strategies related to natural resources management.
47. Strengthen regional and international cooperation for combating desertification [through, inter alia, the adoption of legal and other instruments].

Activities

Management-related

48. National Governments should:

(a) Establish or strengthen, national and local anti-desertification authorities within government and local executive bodies, as well as local land-users committees/associations, in all rural communities affected, with a view to organizing working cooperation between all actors concerned, from the grass-roots level of farmers/pastoralists through to the higher levels of Government;

(b) Develop national plans of action to combat desertification and incorporate them, as appropriate, as integrated parts of national development plans and national environmental action plans;

(c) Implement policies directed to the improvement of land use, the appropriate management of common lands, the provision of incentives to small farmers and pastoralists, the involvement of women, and to the encouragement of private investment in the development of drylands;

(d) Ensure coordination among ministries and institutions working on anti-desertification programmes at national and local levels.

Data and information

49. National Governments should promote information exchange and cooperation with respect to national planning and programming among affected countries, inter alia, through networking.

International and regional cooperation and coordination

50. The relevant international organizations, multilateral financial institutions, non-governmental organizations and bilateral agencies should strengthen their cooperation in assisting the preparation and integration of anti-desertification control programmes into national planning strategies, the establishment of national coordinating and monitoring mechanisms and the regional and global networking of these plans and mechanisms.

51.

Means of implementation

Financing and cost-evaluation

52. The total financing required to implement this programme area is about US\$ 180 million a year, while the average annual financing required from international sources is about US\$ 90 million. From this international figure, costs related to accelerated development would be about US\$ 80 million a year, and the costs for strengthening the capacity of international institutions would be about US\$ 10 million a year.

Scientific and technological means

53. National Governments, in cooperation with appropriate international and regional organizations, should:

(a) Develop and introduce appropriate improved sustainable agricultural and pastoral technologies that are socially and environmentally acceptable and economically feasible;

(b) Undertake applied study of integrating environmental and developmental activities into national development plans.

Human resource development

54. National Governments should undertake nation-wide major anti-desertification awareness/training campaigns within countries affected through existing national mass media facilities, educational networks and newly created or strengthened extension services. This should ensure people's access to knowledge of desertification and drought and to national Plans of Action to Combat Desertification.

Capacity-building

55. National Governments should establish and maintain mechanisms to ensure coordination of sectoral ministries and institutions, including local-level institutions and appropriate non-governmental organizations, in integrating anti-desertification programmes into National Development Plans and National Environmental Action Plans.

E. DEVELOPING COMPREHENSIVE DROUGHT PREPAREDNESS AND DROUGHT-RELIEF SCHEMES, INCLUDING SELF-HELP ARRANGEMENTS, FOR DROUGHT-PRONE AREAS AND DESIGNING PROGRAMMES TO COPE WITH ENVIRONMENTAL REFUGEES

Basis for action

56. Drought, in differing degrees of frequency and severity, is a recurring phenomenon throughout much of the developing world, especially Africa. Apart from the human toll - an estimated 3 million people died in the mid-1980s because of drought in sub-Saharan Africa - the economic costs of drought-related disasters is also high in terms of lost production, misused inputs and diversion of development resources.

57. Early warning systems to forecast drought will make possible the implementation of drought-preparedness schemes. Integrated packages at the farm and watershed level, such as alternative cropping strategies, soil and water conservation and promotion of water harvesting techniques, could enhance the land capacity to cope with drought and provide basic necessities, thereby minimizing the number of environmental refugees and the need for emergency drought relief. At the same time, contingency arrangements for relief are needed for periods of acute scarcity.

Objectives

58. Develop national strategies for drought preparedness in the short- and long-term perspectives aimed at reducing vulnerability of production systems to drought.

59. Strengthen the flow of early warning information to decision makers and land users, to enable nations to implement strategies for drought interventions.

60. Develop and integrate drought-relief schemes and means to cope with environmental refugees into national and regional development planning.

Activities

Management-related

61. In drought-prone areas, national Governments should:

(a) Design strategies to deal with national food deficiencies in periods of production shortfall - these should deal with issues of storage and stocks, imports, port facilities, food storage, transport and distribution;

(b) Improve national and regional capacity for agro-meteorology and contingency crop planning - agro-meteorology links the frequency, content and regional coverage of weather forecasts with the requirements of crop planning and agricultural extension;

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(c) Prepare rural projects for providing short-term rural employment to drought-affected households - the loss of income and entitlement to food is a common source of distress in times of drought and rural works help to generate the income required to buy food for poor households;

(d) Establish contingency arrangements, where necessary, for food/fodder distribution and water supply;

(e) Establish budgetary mechanisms for providing resources at short notice for drought relief;

(f) Establish safety nets for the most vulnerable households.

Data and information

62. National Governments of affected countries should:

(a) Implement research on seasonal forecasts to improve contingency planning and relief operations and allow preventive measures to be taken at the farm level, such as selection of appropriate varieties and farming practices, in times of drought;

(b) Support applied research on ways of reducing water loss from soils, on increasing water absorption capacities of soils and on water harvesting techniques in drought-prone areas;

(c) Strengthen national early warning systems, with particular emphasis on the area of risk-mapping, remote sensing, agro-meteorological modelling, integrated multidisciplinary crop-forecasting techniques and computerized food supply/demand analysis.

International and regional cooperation and coordination

63. National Governments, in cooperation with the appropriate intergovernmental organizations, should:

(a) Establish a system of stand-by capacities in terms of foodstock, logistical support, personnel and finance for quick international response to drought-related emergencies;

(b) Support WMO Programmes on Agro-Hydrology and Meteorology (AGRHIMET) and the African Centre for Meteorological Application for Development (ACMAD) as well as the efforts of CILSS and IGADD;

(c) Support FAO's and other programmes for the development of national early warning systems and food security assistance schemes;

(d) Strengthen and expand the scope of existing regional programmes, the activities of appropriate United Nations agencies such as WFP, UNDRO and UNSO, as well as non-governmental organizations, aimed at mitigating the effects of drought and emergencies.

Means of implementation

Financing and cost-evaluation

64. This programme area requires two sets of cost evaluations. The first set deals with developing drought preparedness and drought-relief schemes, the total cost of which is about US\$ 200 million a year, with the average annual financing required from international sources amounting to about US\$ 100 million. From this international figure, costs related to accelerated development would be about US\$ 90 million a year and the amount for strengthening the capacity of international institutions would be about US\$ 10 million a year. The second set deals with the cost required to cope with environmental refugees displaced from their homes by emergencies such as drought, disasters and other environmental reasons. The international financing required to cope with such emergencies is about US\$ 1 billion a year.

Scientific and technological means

65. National Governments and drought-prone communities should:

(a) Use traditional mechanisms to cope with hunger as a means of channelling relief and development assistance;

(b) Strengthen and develop national, regional and local interdisciplinary research and training capabilities for drought-prevention strategies.

Human resource development

66. National Governments should:

(a) Promote training of decision makers and land users in the effective utilization of early warning system information;

(b) Strengthen research and national training capabilities to assess the impact of drought and to develop methodologies to forecast drought.

Capacity-building

67. National Governments should:

(a) Improve and maintain mechanisms with adequate staff, equipment and finances for monitoring drought parameters to take preventive measures at regional, national and local levels;

(b) Establish interministerial linkages and coordinating units for drought monitoring, impact assessment and management of drought-relief schemes.

F. ENCOURAGE AND PROMOTE POPULAR PARTICIPATION AND
ENVIRONMENTAL EDUCATION, FOCUSING ON
DESERTIFICATION CONTROL AND MANAGING THE EFFECTS
OF DROUGHT

Basis for action

68. The experience to date on the successes and failures of programmes and projects points to the need for popular support to sustain desertification and drought-control activities. But it is necessary to go beyond the theoretical ideal of popular participation and to focus on obtaining actual active popular involvement, rooted in the concept of partnership. This implies the sharing of responsibilities and mutual involvement of all parties. In this context, this programme area should be considered as an essential supporting component of all desertification-control and drought-related activities.

Objectives

69. Develop and increase public awareness and increased knowledge concerning desertification and drought, including integration of environmental education in the curricula of primary and secondary schools.

70. Establish and promote true partnership between government authorities, both at the national and local levels, other executing agencies, non-governmental organizations and land users stricken by drought and desertification, giving land users a responsible role in the planning and execution processes in order to benefit fully from development projects.

71. Ensure that the partners understand one another's needs, objectives and points of view by providing a variety of means such as training, public awareness, open dialogue etc.

72. Support local communities in their own efforts in combating desertification and draw on the knowledge and experience of concerned populations ensuring the full participation of women and indigenous population.

Activities

Management-related

73. National Governments, with the support of the international community, should:

(a) Adopt policies and establish administrative structures for more decentralized decision-making and implementation;

(b) Establish and utilize mechanisms for the consultation and involvement of land users and enhancing grass-roots-level capability to identify and/or contribute to identification and planning of actions;

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(c) Define specific programmes/projects objectives in cooperation with local communities. Design local management plans to include such measures of progress, thereby providing a means to alter project design or change management practices, as appropriate;

(d) Introduce legislative, institutional/organizational and financial measures to secure user involvement and access to land resources;

(e) Establish and/or expand favourable conditions for the provisions of services, such as credit facilities and marketing outlets for rural populations;

(f) Develop training programmes to increase the level of education and participation of people, particularly women and indigenous groups, through, inter alia, literacy and development of technical skills;

(g) Create rural banking systems to facilitate access by rural populations, particularly women and indigenous groups, to credit and also to promote rural savings;

(h) Adopt appropriate policies to stimulate private and public investment.

Data and information

74. National Governments should:

(a) Review, develop and disseminate gender-desegregated information, skills, and know-how at all levels on how to organize and promote popular participation;

(b) Accelerate the development of technological know-how, focusing on appropriate and intermediate technology;

(c) Disseminate knowledge about applied research results on soil and water issues, appropriate species, agricultural techniques and technological know-how.

International and regional cooperation and coordination

75. National Governments, with the support of the international community, should:

(a) Develop programmes of support to regional organizations such as CILSS, IGADD, SADCC, UMA and other intergovernmental organizations in Africa and other parts of the world, to strengthen outreach programmes and increase participation of non-governmental organizations together with rural populations;

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(b) Develop mechanisms for facilitating technology cooperation and promote it as an element of all external assistance and activities of public or private sector technical assistance projects;

(c) Promote collaboration among different actors in environment and development programmes;

(d) Encourage the emergence of representative organizational structures to foster and sustain interorganizational cooperation.

Means of implementation

Financing and cost-evaluation

76. The total financing required for this programme area is about US\$ 2.5 billion a year, while the average annual financing required from international sources is about US\$ 1 billion.

Scientific and technological means

77. National Governments, with the support of the international community, should promote the development of indigenous know-how and technology transfer.

Human resource development

78. National Governments, with the support of the international community, should:

(a) Support and/or strengthen institutions involved in public education, including the local media, schools and community groups;

(b) Increase the level of public education.

Capacity-building

79. National Governments should promote local rural organization members and train and appoint more extension officers working at the local level.

Notes

1/ Section II, Chapter 6, Managing Fragile Ecosystems: Sustainable Mountain Development.

2/ Section II, Chapter 9, Programme Areas A and G: "Integrated Management and Sustainable Development of Coastal Areas, Exclusive Economic Zones and [Marine Ecosystems]" and "Sustainable Development of Islands", respectively.
